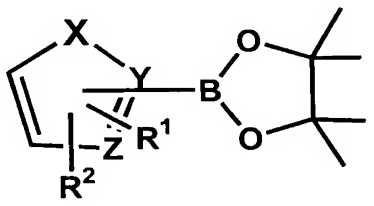
Claim Amendments

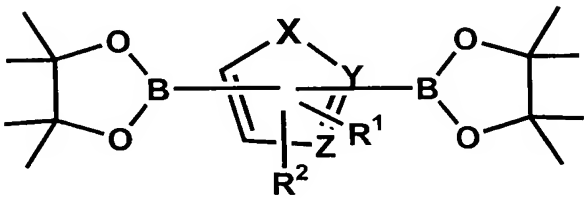
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1. (Currently Amended) A process of producing a heteroaryl boron compound represented by formula (V) or (VI):

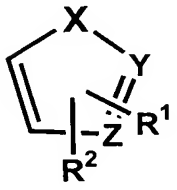


(V)



(VI)

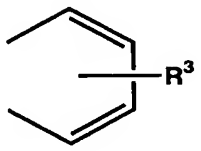
wherein, X, Y, Z, R^1 and R^2 are the same as defined below, comprising: reacting an aromatic heterocyclic compound represented with the following formula (I):



(I)

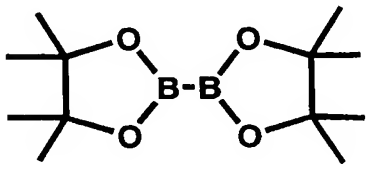
wherein X represents an oxygen atom[[,]] or a sulfur atom ~~or an imino group which may have a substituent~~, each of Y and Z ~~may be the same or different and respectively represent~~ represents -CH= ~~or -N=~~, R^1 and R^2 may be the same or different and ~~respectively represent~~ each represents a hydrogen atom, a linear or branched C_{1-8} alkyl group, a linear or branched C_{1-8} alkoxy group, a nitro group, a cyano group, a halogenated C_{1-8} alkyl group, a halogen atom, a carbamoyl group, a C_{1-8} acyl group, a C_{1-8} alkoxycarbonyl group, an amino

group which may have a substituent, ~~or the following formula (II) in which R^1 and R^2 are adjacent and form a ring:~~

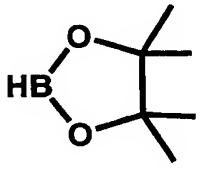


(I I)

~~wherein, R^3 represents a hydrogen atom, a linear or branched C_{1-8} alkyl group, a linear or branched C_{1-8} alkoxy group, nitro group, cyano group, halogenated C_{1-8} alkyl group, halogen atom, carbamoyl group, C_{1-8} acyl group, C_{1-8} alkoxycarbonyl group or amino group that may have a substituent~~ with a boron compound represented with the following formula (III) or (IV):



(I I I)

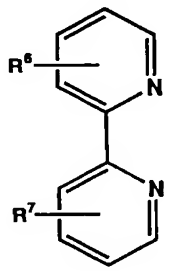


(I V)

in the presence of a univalent iridium complex catalyst <u>of formula (X):</u>

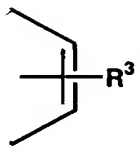
IrABn (X)

wherein A represents a chlorine atom, a linear or branched C_{1-8} alkoxy group, a hydroxyl group or a phenyloxy group which optionally has a substituent, B represents 1,5-cyclooctadiene or 1-cyclooctene, and n represents 1 or 2, or a univalent iridium complex catalyst in which the complexing ligand ~~is a Lewis base having the ability to coordinate with univalent iridium~~ has formula (XI):



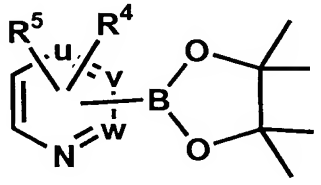
(X I)

wherein R^6 and R^7, located at positions 3 and 3' of the bipyridine base, taken together form a divalent radical of the following formula:

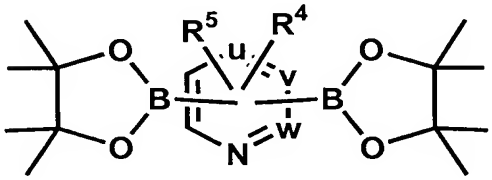


wherein R^3 represents a hydrogen atom, a linear or branched C_{1-8} alkyl group, a linear or branched C_{1-8} alkoxy group, a nitro group, a cyano group, a halogenated C_{1-8} alkyl group, a halogen atom, a carbamoyl group, a C_{1-8} acyl group, a C_{1-8} alkoxycarbonyl group, or an amino group which may or may not have a substituent.

Claim 2. (Withdrawn) A production process of a heteroaryl boron compound represented with general formula (VIII) or (IX):

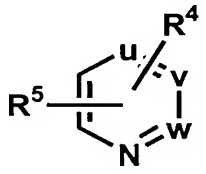


(VIII)



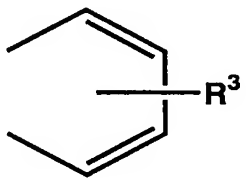
(IX)

(wherein, u, v, w, R^4 and R^5 are the same as defined below) comprising: reacting an aromatic heterocyclic compound represented with the following general formula (VII):



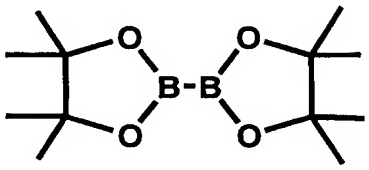
(VII)

(wherein, u, v and w may be the same or different and respectively represent -CH= or -N=, and R^4 and R^5 may be the same or different and respectively represent a hydrogen atom, linear or branched C_{1-8} alkyl group, linear or branched C_{1-8} alkoxy group, nitro group, cyano group, halogenated C_{1-8} alkyl group, halogen atom, carbamoyl group, C_{1-8} acyl group, C_{1-8} alkoxycarbonyl group, amino group which may have a substituent, or the following general formula (II) in which R^4 and R^5 are adjacent and form a ring:

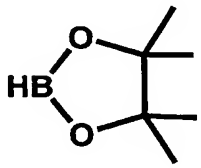


(II)

(wherein, R^3 represents a hydrogen atom, a linear or branched C_{1-8} alkyl group, linear or branched C_{1-8} alkoxy group, nitro group, cyano group, halogenated C_{1-8} alkyl group, halogen atom, carbamoyl group, C_{1-8} acyl group, C_{1-8} alkoxycarbonyl group or amino group that may have a substituent)) with a boron compound represented with the following general formula (III) or (IV):



(III)



(IV)

in the presence of an iridium-containing catalyst and a ligand.

Claim 3. (Canceled)

Claim 4. (Currently Amended) The process according to claim ~~3~~ 1, wherein A of the iridium-containing catalyst is a methoxy group, B is 1,5-cyclooctadiene and n is 1.

Claim 5. (Currently Amended) The process according to claim ~~3~~ 1, wherein A of the iridium-containing catalyst is a chlorine atom, B is 1,5-cyclooctadiene and n is 1.

Claim 6. (Currently Amended) The process according to claim ~~3~~ 1, wherein A of the iridium-containing catalyst is a chlorine atom, B is 1-cyclooctene and n is 2.

Claim 7. (Canceled)

Claim 8. (Currently Amended) The process according to claim ~~7~~ 1, wherein the ligand is 2,2'-bipyridine.

Claim 9. (Currently Amended) The process according to claim ~~7~~ 1, wherein[[,]] the ligand is 4,4'-di-tert-butyl-2,2'-bipyridine.

Claim 10. (Previously Presented) The process according to claim 1, wherein the reaction is carried out in the presence of solvent.

Claim 11. (Previously Presented) The process according to claim 10, wherein the solvent is a hydrocarbon.

Claim 12. (Canceled)